CLAIMS

- 44 -

The use of an enterobacterium OmpA protein, or of a fragment thereof, for preparing a pharmaceutical composition useful in generating or increasing a cytotoxic T response against an infectious agent or a tumor cell.

- 45 -

The use of Claim 44, wherein the pharmaceutical composition containing the enterobacterium OmpA protein, contains an antigen or a hapten specific for the infectious agent or for the tumor cell.

- 46 -

The use of Claim 44, wherein the infectious agent is a viral particle, a bacterium, or a parasite.

- 47 -

The use of Claim 44, wherein the enterobacterium OmpA protein, or a fragment thereof, is obtained using a method of extraction from a culture of the enterobacterium.

- 48 -

The use of Claim 44, wherein the enterobacterium OmpA protein, or a fragment thereof, is obtained by recombination.

- 49 -

The use of Claim 44, wherein the enterobacterium is *Klebsiella pneumoniae*.

- 50 -

The use of Claim 49, wherein an amino acid sequence of the OmpA protein, or a fragment thereof, is selected from

a) the amino acid sequence of SEQ ID No. 2;

b) the amino acid sequence of a sequence having at least 80% homology with SEQ ID No. 2; and

c) the amino acid sequence of a fragment of at least 5 amino acids of a sequence as defined in a).

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- 51 -

The use of Claim 45, wherein the antigen or hapten is selected from peptides, lipopeptides, polysaccharides, oligosaccharides, nucleic acids, lipids and any compound capable of specifically directing a CTL response against an infectious agent or a tumor cell.

- 52 -

The use of Claim 45, wherein the antigen or hapten is coupled to or mixed with the OmpA protein or a fragment thereof.

- 53 -

The use of Claim 52, wherein the antigen or hapten is coupled, by covalent attachment, with the OmpA Protein or a fragment thereof.

- 54 -

The use of claim 53, wherein the coupling by covalent attachment is coupling produced by chemical synthesis.

- 55 -

The use of Claim 54, wherein one or more attachment elements is(are) introduced into the OmpA protein, or a fragment thereof, and/or into the antigen or hapten, in order to facilitate the chemical coupling.

- 56 -

The use of Claim 55, wherein the attachment element introduced is an amino acid.

- 57 -

The use of Claim 53, wherein the coupling between the antigen or hapten and the OmpA protein, or a fragment thereof, is produced by genetic recombination, wherein the antigen or hapten is a peptide in nature.

- 58 -

The use of Claim 57, wherein the pharmaceutical composition comprises a nucleic acid construct encoding the hybrid protein.

- 59 -

The use of Claim 58, wherein the nucleic acid construct is contained in a vector or in a transformed host cell capable of expressing the hybrid protein.

- 60 -

The use of Claim 44 for preparing a pharmaceutical composition intended to eliminate infectious agents or inhibit tumor growth.

- 61 -

The use of Claim 44 for preparing a pharmaceutical composition intended to prevent or treat infectious diseases comprising viral, bacterial, fungal and parasitic infections.

- 62 -

The use of Claim 44 for preparing a pharmaceutical composition intended to prevent or treat cancers.

- 63 -

The use of Claim 62 for preparing a pharmaceutical composition intended to prevent or treat cancers associated with a tumor antigen.

- 64 -

The use of Claim 62 for preparing a pharmaceutical composition intended to prevent melanomas.

- 65 -

The use of Claim 44, wherein the pharmaceutical composition is vehicled in a form making it possible to improve its stability and/or its immunogenicity.

- 66 -

The use of Claim 65, wherein the vehicle is selected from:

- a liposome,
- a viral vector containing a nucleic acid construct encoding the OmpA protein, a fragment thereof, an antigen or hapten, or a hybrid protein, and
- a transformed host cell capable of expressing the OmpA protein, a fragment thereof, an antigen or hapten, or a hybrid protein.

- 67 -

The use of Claim 58, wherein the nucleic acid construct or the nucleic acid construct contained in the vector or the transformed host cell

comprises a nucleic acid sequence chosen from SEQ ID No. 1, a fragment thereof having at least 15 consecutive nucleotides of SEQ ID No. 1, or a sequence having at least 80% homology with one of the sequences.

- 68 -

A pharmaceutical composition, containing at least one enterobacterium OmpA protein or a fragment thereof, combined by mixing or by coupling, with at least one antigen or one hapten associated with, or specific for, a tumor cell, in a pharmaceutically-acceptable medium.

- 69 -

The composition of Claim 68, wherein the enterobacterium OmpA protein, or a fragment thereof, is obtained using a method of extraction from a culture of the enterobacterium.

- 70 -

The composition of Claim 68, wherein the enterobacterium OmpA protein, or a fragment thereof, is obtained by recombination.

- 71 -

The composition of Claim 68, wherein the enterobacterium is *Klebsiella pneumoniae*.

- 72 -

The composition of Claim 71, wherein the amino acid sequence of the OmpA protein, or a fragment thereof, is selected from:

a) the amino acid sequence of SEQ ID No. 2;

b) the amino acid sequence of a sequence having at least 80% homology with SEQ ID No. 2; and

c) the amino acid sequence of a fragment of at least 5 amino acids of a sequence as defined in a).

- 73 -

The composition of Claim 68, wherein the antigen or hapten is selected from peptides, lipopeptides, polysaccharides, oligosaccharides, nucleic acids, lipids and any compound capable of specifically directing a CTL response against the tumor cell.

- 74 -

The composition of Claim 68, wherein the antigen or hapten is coupled, by covalent attachment, with the OmpA protein or a fragment thereof.

- 75 -

The composition of Claim 74, wherein the coupling by covalent attachment is coupling produced by chemical synthesis.

- 76 -

The composition of Claim 75, wherein one or more attachment elements is(are) introduced into the OmpA protein, or a fragment thereof, and/or into the antigen or hapten, in order to facilitate the chemical coupling.

- 77 -

The composition of Claim 76, wherein the attachment element introduced is an amino acid.

- 78 -

The composition of Claim 74, wherein the coupling between the antigen or hapten and the OmpA protein, or a fragment thereof, is produced by genetic recombination, wherein the antigen or hapten is a peptide in nature.

- 79 -

The composition of Claim 75, wherein the pharmaceutical composition comprises a nucleic acid construct encoding the hybrid protein obtained after the coupling.

- 80 -

The composition of Claim 79, wherein the nucleic acid construct is contained in a vector or in a transformed host cell capable of expressing the hybrid protein.

- 81 -

The composition of Claim 79, wherein the nucleic acid construct comprises a nucleic acid sequence chosen from SEQ ID No. 1, a fragment thereof having at least 15 consecutive nucleotides of SEQ ID No. 1, or a sequence having at least 80% homology with SEQ ID No. 1.

- 82 -

The composition of Claim 68, wherein the pharmaceutical composition is vehicled in a form which makes it possible to improve its stability and/or its immunogenicity.

- 83 -

The composition of Claim 82, wherein the vehicle is selected from:

- a liposome,
- a viral vector containing a nucleic acid construct encoding the OmpA protein, a fragment thereof, an antigen or hapten, or a hybrid protein, and
- a transformed host cell capable of expressing the OmpA protein, a fragment thereof, an antigen or hapten, or a hybrid protein.

- 84 -

The composition of Claim 68, wherein the pharmaceutically-acceptable medium consists of water, an aqueous saline solution, or an aqueous solution based on dextrose and/or on glycerol.

- 85 -

The composition of Claim 68, wherein the composition also contains a detergent.

- 86 -

The composition of Claim 68, without any other adjuvant for inducing a CTL response.